Claims

1. A method for transformation of potato plants by transforming potato plant cells with an expression vector comprising

   a) regulatory sequences of a promoter active in plants;

   b) operably linked thereto a DNA sequence encoding a protein with the biological activity of an AHA synthase resistant to inhibitors of potato plant wildtype AHA synthase; and

   c) operably linked thereto regulatory sequences which serve as transcription termination and/or polyadenylation signals in plants,

   selecting for AHA synthase inhibitor resistant cells and regenerating them to transgenic plants.

2. A method for transformation according to claim 1, wherein the expression vector comprises a DNA sequence according to SEQ-ID No. 1.

3. A method for transformation according to claim 1, wherein the DNA sequence encoding a protein with the biological activity of an AHA synthase resistant to inhibitors of potato plant wildtype AHA synthase is selected from the group consisting of

   a) DNA sequence comprising a nucleotide according to SEQ-ID NO. 1;

   b) DNA sequence comprising a nucleotide sequence which hybridizes to a complementary strand of the nucleotide sequence a)

   c) DNA sequence comprising a nucleotide sequence which is degenerate to the nucleotide sequence of a) and

   d) DNA sequence being a derivative, analogue or fragment of a nucleotide sequence of a), b) or c) and encoding a protein possessing AHA synthase activity and conferring resistance to AHA synthase inhibitors.

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4. A method for transformation according to any of claims 1 to 3, wherein the AHA synthase promoter from Arabidopsis thaliana or the nos promoter is used.

5. A method for transformation according to any of claims 1 to 4, wherein the AHA synthase terminator from Arabidopsis thaliana or the OCS terminator is used.

6. A method for transformation according to any of claims 1 to 5, wherein for selection a imidazolinone type herbicide is used.

7. A method for transformation according to claim 6, wherein for selection (RS)-2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)-5-methoxymethylnicotinic acid is used.

8. A plant expression vector according to claim 1 or 2 additionally comprising a heterologous DNA sequence.

9. A plant expression vector according to claim 8, wherein the heterologous DNA sequence encodes a peptide, protein, antisense-, sense-RNA, viral RNA or ribozyme.

10. A plant expression vector according to claim 9, wherein the heterologous DNA sequence contains information that causes changes in the carbohydrate concentration and the carbohydrate composition of regenerated potato plants.

11. A plant expression vector according to claim 10, wherein the heterologous DNA sequence contains information that causes the increased production of amylopectin type starches.

12. A plant expression vector according to claim 10, wherein the heterologous DNA sequence contains information that causes the increased production of amylose type starches.

13. A transgenic potato plant cell produced by the method for transformation according to any of claims 1 to 7 and containing a plant expression vector according to any of claims 8 to 12.

14. A transgenic potato plant produced by the method of transformation according to any of claims 1 to 7, wherein the regenerated plant exhibits an elevated resistance to imidazolinone type herbicides.

15. Harvest product of the transgenic potato plant according to any of claims 13 and 14 comprising a DNA sequence SEQ ID No. 1 or a DNA sequence according to claim 3.

16. Harvest product according to claim 15 wherein the harvest product is a tuber.

17. Propagation material of transgenic potato plants comprising a DNA sequence SEQ ID No. 1 or a DNA sequence according to claim 3.

18. Use of a DNA sequence SEQ ID No. 1 according to claim 2 or a DNA sequence according to claim 3, or a plant expression vector according to of any of claims 8 to 12 in potato plant cells, potato tissue cultures, potato plants and/or potato plant breeding.